III. Redefining Distribution Levels

It is widely believed that drug markets offer quantity discounts, or that the price paid per gram of a substance falls as the quantity purchased rises.[12] Indeed, our previous reports support this hypothesis. However, little is known about the levels at which these quantity discounts kick in or what transaction sizes are involved for defining different market levels. It is extremely difficult to identify market distribution levels for specific illicit drugs because it is impossible to perfectly classify all observations. For example, the term *retail* typically refers to transactions in which the buyer is the end-user, but there is no way of identifying end-users from low-end sellers in the STRIDE data. All that is available in STRIDE is the amount traded. Some people may buy large quantities for their personal consumption over a long time period, while others might buy small quantities with the intent of further dividing the substance into individual-size packages to sell separately.

In previous reports, different distribution levels were defined on the basis of the number of pure grams involved in the transaction. This report deviates from that procedure in two ways. First, it no longer specifies quantity ranges based on pure grams, but rather bases quantity ranges on amounts unadjusted for purity. It is more natural to think of distribution levels in this fashion, and doing so reduces the likelihood that valid rip-offs get misclassified. Under the old classification scheme, a transaction involving 100 grams of heroin that was 0.1 percent pure would be analyzed as a *retail* transaction because it involved 0.1 pure grams of heroin. Under the present scheme, such a transaction would be grouped with other transactions involving similarly large amounts.[13]

[12] Caulkins, J.P. (1995), "Domestic Geographic Variation in Illicit Drug Prices," *The Journal of Urban Economics*, Vol. 37, No. 1, pp. 38–56.

[13] An alternative approach would be to base the distribution level on the cost of the transaction. While this approach has many desirable features, it could create problems. First and foremost, it could cause a misrepresentation of price differences across distribution levels because higher-price-per-pure-gram transactions would get pushed to higher distribution levels. For example, consider a case in which there are two heroin observations of 1 gram at 50 percent purity, with one transaction being for $300 and the other for $150. If $200 were the threshold between the first and second distribution levels, then these two observations would be classified in different categories even though they involve transactions of the same quantity and purity. A second potential problem that could result from defining distribution levels based on the cost of the transaction is that a large price change over time could affect the classification of a transaction.

Second, this report does not refer to these different levels as distribution levels, but instead refers to them as quantity levels. Although some transaction sizes are relatively more common than others in the data, it is not entirely clear which transaction sizes clearly distinguish end-users from low- and mid-level sellers. In an effort to avoid problems associated with specific definitions used to describe precise distribution levels, observations for each drug are simply separated into three (or, in the case of powder cocaine, four) bins, which we refer to as *quantity levels*, based on the amount involved in the transactions. Specific cutoff points are determined on the basis of two objectives: (1) trying to find reasonably round transaction amounts that appear relevant in the data, and (2) trying to retain a large number of observations in each bin (to assist with estimation of the empirical models). Table 3 identifies the cutoff points for each drug and the number of observations included at each quantity level. Plots showing the frequency of specific amounts used to examine the reasonableness of these definitions are presented in Appendix A.

Table 3. Market Quantity Levels, by Drug, for Price/Purity Model Sample

Quantity Level	Amount in Grams	Number of Observations	Percent of Observations
Powder cocaine			
1	AMOUNT<=2	6,345	14.0
2	2< AMOUNT<=10	7,807	17.2
3	10<AMOUNT<=50	18,979	41.8
4	AMOUNT>50	12,292	27.1
Crack cocaine			
1	AMOUNT<=1	13,844	29.8
2	1< AMOUNT<=15	17,006	36.6
3	AMOUNT>15	15,606	33.6
Heroin			
1	AMOUNT<=1	13,294	47.8
2	1< AMOUNT<=10	7,552	27.2
3	AMOUNT>10	6,951	25.0
d-Methamphetamine			
1	AMOUNT<=10	3,565	29.1
2	10< AMOUNT<=100	5,487	44.9
3	AMOUNT>100	3,180	26.0
Marijuana			
1	AMOUNT<=10	2,281	49.6
2	10< AMOUNT<=100	846	18.4
3	AMOUNT>100	1,470	32.0

Source: System to Retrieve Information on Drug Evidence (STRIDE).